Remarks

The Official Action of October 17, 2005 indicated that this application was in condition for allowance except for formal matters. The present amendment responds to that Official Action. Specifically, the Official Action objected to claims 1-36 because of informalities. Claims 1-36 were indicated to be allowable if amended to overcome these objections. The objections are addressed below. Claim 33 has been canceled and claims 1, 4-32, and 34-36 have been amended following the suggestions of the Examiner. Claims 1-32 and 34-36 are presently pending.

Based on the Examiner's recommendations during the telephone interview summarized below, we have attached a replacement specification and a marked up specification showing all amendments.

Interview Summary

The Examiner is thanked for the courtesy of a telephone interview concerning the claim objections of the Official Action of October 17, 2005. During the call, the Examiner asked us to provide a marked up specification and a replacement specification. It was agreed to provide the replacement specification and marked up version containing all of the amendments from the Amendment of August 18, 2005 and amendments addressing the informalities identified in the Official Action of October 17, 2005.

The Examiner requested the use of alternative language for the phrases "in one loop" and "channel-related divisions" in claims 4, 5, 21, and 22 unless specific instances of use of the phrases could be identified in the specification. This request was also agreed to.

The Examiner also requested that the dependent claims 26-36, depending from the independent method claim 18, be evaluated to determine whether a dependent claim introduces a new step or refines the meaning of a term used in a previous step. Depending upon the outcome of the evaluation, he suggested that claims should be adjusted if necessary. The Examiner cited claims 28 and 30 as examples of dependent claims written as comprising a new step which he felt should be so evaluated. This evaluation has been made and the claims amended appropriately.

Amendments to the Specification

It is noted that we moved the "Cross Reference to Related Applications" section to its appropriate location before the "Field of the Invention" section.

It is also noted that in the Amendment dated August 18, 2005, corrections were made to page 2, as follows: Patent No. "5,41,468" was amended to "5, 841,468" and "CONTROLLERFOR" was amended to "CONTROLLER FOR". On page 7, line 18, "2EIn" was amended to "2E. Also, in the Amendment dated August 18, 2005, corrections were made to page 21, line 14 where "of." was replaced with "of". At page 22, line 27, "1204" was replaced with "1208" to correctly reference the equalizer 1208.

The paragraph beginning at page 9, line 1, has now been amended to replace the "etc." with the other mini-headends' reference numerals "402, and 404" as illustrated in Figure 4 and as previously introduced on page 8, line 16, rather than deleting "etc.".

The paragraph beginning at page 14, line 19 has been amended to correct the naming of the TDD front end processor 1000 as TDD 1000 to be consistent with the use of TDD 1000 on page 14, line 28, page 15, lines 2, 9, and 11, and page 16, line 20. Also, in the paragraph beginning on page 14, line 19, the phrase "channels of a bandwidths" has been amended to "channels of bandwidths" to correct this obvious typographical error.

The paragraph beginning at page 16, line 24, has been amended to change "front end processor 1000" to "TDD 1000" for consistency of usage with usage of TDD 1000 elsewhere in the description. A typo at page 16, line 26, has been corrected by changing "Figure 1000" to "Figure 10". Corrections were also made at page 16, line 29, and page 17, lines 2 and 6, to use "follow-on stage" as a consistent name for element 1100 as previously introduced at page 16, line 20.

The paragraph beginning at page 17, line 13, has similarly been amended at line 18 to correct the name for element 1100 as the "follow-on stage".

Informality Objections to Claims 1-36

Claims 1 and 4-36 have been amended to be more clear and distinct.

Claims 1, 4-7, 9-14, 16-22, and 25-36 have been amended as suggested by the Examiner. Claims 8, 15, 23, and 24 have been amended based on the suggestions of the Examiner and to resolve antecedent basis concerns. These claims are addressed in more detail below.

The Examiner asked for clarification of elements in claims 1, 4, 5, 21, and 22 which are addressed in more detail below.

The Examiner also indicated that the limitations in claims 26-36, respectively, appear to be oriented to "apparatus type limitations" rather than "method type limitations". Based on such considerations, claims 25-32 and 34-36 have been amended as discussed in further detail below.

Claim 1 has been amended to replace "related" with "corresponding" as suggested by the Examiner. In claim 1, the Examiner indicated that the limitations recited in lines 5 and 6 appear to be "method type limitation". The limitations recited in lines 5-6 further define the "data stream representative of the communications band" and are not limitations of the receiver. Claim 1 has been amended by replacing the phrase "with each channel within the communications band converted to baseband" with the phrase "with each channel within the communications band having been converted to baseband" to make the limitation recited in lines 5-6 more clear and distinct. As discussed at lines 1-7 of the second paragraph on page 6 and as shown in Figure 1, the receiver 110 receives and operates on the data stream 114 "that represents each channel within the band as decimated channel signals that have been down-converted to baseband at least twice the symbol rate of the given communications channel". As further defined in dependent claim 8, a receiver front end may suitably produce such a signal. Alternatively, the objected to

language might also be deleted from this claim. Please call Mr. Pechanek at 919-806-1600 ext. 7 if any further discussion is desired or required on this point.

Claim 4 has been amended as suggested by the Examiner. In claim 4, the Examiner asked for clarification of the phrase "in one loop". The phrase "in one loop" has been amended to "in one cycle". By way of example, "in one cycle" refers to the "circular" nature of accessing data from the "circular buffer". Data is transferred out from channel data locations 1 through 16 of a circular buffer with new data written behind until the data from the last channel data location has been transferred and written to and the "cycle" then repeats. See page 21, lines 10-18 of the present invention. The Examiner also asked for clarification of the phrase "channel-related divisions". This phrase has been amended to read "channel allocated locations". For example, "channel-allocated locations" refers to the separate "data memory locations for each of the two or more non-overlapping channels" as recited in claim 2. See also page 21, lines 24-29 of the present invention, for example. The quotes on CLK have been removed to correct this obvious typographical error.

Claim 5 has been amended as suggested by the Examiner. In claim 5, the Examiner asked for clarification of "channel-related divisions". As noted above, "channel-related divisions" has been amended to "channel allocated locations" which refers to the separate "data memory locations for each of the two or more non-overlapping channels" as recited in claim 2.

Claim 8 has been amended to address an antecedent basis issue identified by the Examiner in line 3 of claim 8. The "data stream" in line 3 is amended to "a sampled data stream" as discussed at page 6, lines 10-12 of the first paragraph on page 6, for example, and a change is

made in line 8 for "a decimator ... to produce the data stream representative of the communications band." to correspond to the antecedent basis found in claim 1.

In claim 15, line 1, the Examiner suggested "front end of claim 13 further" should be replaced by "of claim 9 wherein the receiver front end". Claim 15 has been amended to replace "front end of claim 13 further" with "of claim 13 wherein the receiver front end" consistent with the antecedent of "the successively smaller portions of the communications band" found in claim 13. Also, in claim 15, line 2, before the word "decimators", the phrase "a plurality of" has been inserted as suggested by the Examiner.

Claim 21 has been amended as suggested by the Examiner. In claim 21, the Examiner asked for clarification of "in one loop". As addressed above, "in one loop" has been amended to "in one cycle" which refers to the "circular" nature of accessing data from the "circular buffer", for example. The Examiner also asked for clarification of the phrase "channel-related divisions". The phrase "channel-related divisions" has been amended to "channel allocated locations" which refers to the separate "data memory locations for each of the two or more non-overlapping channels" as recited in claim 19, for example. Also, the quotes on CLK have been removed.

Claim 22 has been amended as suggested by the Examiner. In claim 22, the Examiner asked for clarification of the phrase "channel-related divisions". The phrase "channel-related divisions" has been amended to "channel allocated locations" which refers to the separate "data memory locations for each of the two or more non-overlapping channels" as recited in claim 19, for example.

Claim 23 has been amended to address an antecedent basis issue for "the indexer". The phrase "the indexer providing an indication of which channel" is hereby replaced with the phrase "providing an indication by an indexer of which channel". "(E1)" and "channel" have also been deleted as suggested by the Examiner.

Claim 24 has been amended by changing the phrase "the rate CLK" to the phrase "the clock rate CLK" to follow the antecedent basis found in claim 21 from which claim 24 depends.

Claim 25 has been amended by changing the phrase "digitally modulated signals" to "a sampled data stream" to make clear that "a sampled data stream" is down-converted and decimated. See Fig. 1 and page 6, lines 15-23 of the present invention, for example. The label G is deleted globally.

Claim 26 has been amended to use "method type limitations" as suggested by the Examiner. The phrase "a data stream" has been amended to "the sampled data stream" to follow the antecedent basis in claim 25 from which claim 26 depends. The "sampled data stream" is further clarified as "containing two or more non-overlapping channel signals". The "two or more non-overlapping channel signals" are clarified as "comprising samples of the communication band ..." Also, the step of "accepting the sampled data stream " has been amended to "accepting the sampled data stream containing two or more non-overlapping channel signals in a down-converter" to make clear that "the sampled data stream" is accepted in a down-converter. The step G2 has been amended to "down-converting the two or more non-overlapping channel signals within the communications band to baseband as a down-converted signal" to provide the antecedent basis for step G3 of claim 26. The labels G1, G2, and G3 are now deleted globally.

Claim 27 has been amended to claim the steps of "receiving in a plurality of down-converters the sampled data stream" and "down-converting ... in parallel in the plurality of down-converters".

Claim 28 has been amended to claim the steps of "receiving in a plurality of decimators" and "decimating in parallel in the plurality of decimators, each decimator decimating a corresponding baseband channel signal to the data stream...". The antecedent basis for "the data stream" is found in claim 18.

Claim 29 has been amended to clarify the meaning of "the sampled data stream" of claim 25 as a "data over cable service interface specification (DOCSIS) data stream".

Claim 30 has been amended to clarify the meaning of "the DOCSIS data stream" of claim 29. The "DOCSIS data stream comprises digitally modulated signals that fall within non-overlapping upstream channels that are assigned within a 5 to 42 MHz band."

Claim 31 has been amended to clarify the meaning of the "non-overlapping upstream channels" of claim 30.

Claim 32 has been amended to claim the steps of "receiving in a plurality of down-converters arranged in a tree structure the sampled data stream" and "iteratively converting to baseband ... in the plurality of down-converters arranged in a tree structure".

Claim 33 has been canceled without prejudice.

Claim 34 has been amended to remove the "further comprising the step of" wording and to refine the meaning of the decimating step of claim 26 which claim 34 refers to. To clarify the meaning of the decimating step, claim 34 is amended to read "wherein the step of decimating is

accomplished in decimators on successively smaller portions of the communications band comprising two or more baseband channels".

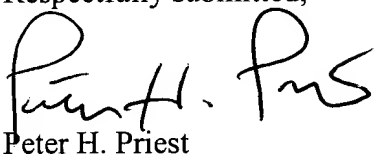
Claim 35 has been amended to remove the "further comprising the step of" wording and to refine the meaning of the decimating step of claim 34 which claim 35 refers to. To clarify the meaning of the decimating step, claim 35 is amended to read "wherein the step of decimating is accomplished in the decimators on each of the baseband channels to a sample rate that is twice the symbol rate of the corresponding baseband channel".

Claim 36 has been amended to refer back to claim 25 and to use "method type limitations" as suggested by the Examiner. Step H is amended to read "receiving a digitally modulated data stream in one or more analog to digital converters (ADCs),...". Step I is amended to read "sampling in the one or more ADCs the entire band at greater than twice highest frequency of the communications band to produce the sampled data stream." The antecedent basis for "the sampled data stream" is found in claim 25. See Fig. 1 and page 6, lines 6-23 of the present invention, for example. The labels H, I, and J are now deleted globally.

Conclusion

All of the presently pending claims, as amended, appearing to resolve the informalities, withdrawal of the objections and prompt allowance are requested.

Respectfully submitted,



Peter H. Priest
Reg. No. 30,210
Priest & Goldstein, PLLC
5015 Southpark Drive, Suite 230
Durham, NC 27713-7736
(919) 806-1600